
***Nemesia ring necrosis virus, a Tymovirus*¹**

Carlye A. Baker² and Ayyamperumal Jeyaprakash³

INTRODUCTION: *Nemesia ring necrosis virus* (NeRNV) is a member of the plant virus family [Tymoviridae](#). It was first found in Germany in the year 2000 (Koenig and Lessman 2000). Since then it has been found in the United Kingdom (Skelton *et al.* 2004) and the United States in the state of [California](#) (Mathews and Dodds 2006). In 2013, it was found in the state of Florida.

HOSTS AND VIRUS DISTRIBUTION: This virus has been found primarily in plant genera grown for ornamental trade. These include *Diascia* spp., *Alonsoa* spp., and *Sutera* spp. (Koenig and Lessman 2000) from the *Scrophulariaceae* or figwort family; *Nemesia* spp. (Skelton *et al.* 2004) from the *Plantaginaceae* or plantain family; *Lobelia* spp. (Mathews and Dodds 2006) from the *Campanulaceae*; and *Verbena* spp. (Mumford *et al.* 2005) from the *Verbenaceae* or vervain family. In Florida, the virus was identified in *Verbena* spp.

DETECTION AND DIAGNOSIS: Antiserum for NeRNV is available from [Leibniz-Institute DSMZ](#) in Germany and [Agdia Inc.](#) in Indiana, USA. NeRNV is also known to cross-react with antiserum for another Tymovirus that also infects various ornamentals, *Scrophularia mottle virus*, (ScrMV). In fact that was how NeRNV was first discovered in both Germany and again in California (Mathews and Dodds 2006). However, further research showed that the host range on indicator plants was different from ScrMV as was the RNA sequence. Primers for RT-PCR have been designed that can differentiate NeMV from ScrMV (Skelton *et al.* 2004). NeRNV has been completely sequenced (Koenig *et al.* 2005) and its sequence is available in [GenBank](#). The virus in Florida was detected using specific PCR primers designed to detect NeRNV.

VIRUS SPREAD: Tymoviruses can be transmitted by beetles and by mechanical inoculation. However; it is likely that this virus is spread not so much by an insect vector, but rather by vegetative propagation of infected perennial nursery plants. Many plants in the nursery trade can be reproduced by taking cuttings from an older plant and rooting them in media. This often takes less time than growing plants from seed, which may or may not breed true. Unfortunately, if the mother plant is infected with a plant virus, such as NeRNV, the virus is also “reproduced” in the new plants. In fact, the *Verbena* plant that tested positive for NeRNV in Florida was also positive for four other plant viruses indicating that this plant probably had been reproduced by cuttings many times in the past without regard to possible virus infections.

CONTROL: Once a plant is infected with a plant virus there is no practical cure. The best control is to obtain and maintain virus-free plants. Plants that have been indexed for the viruses that are known to infect it can be purchased and used as mother plants for cuttings. These indexed plants should be maintained in an insect-free greenhouse away from other plants and retested for viruses periodically. The tools used to make the cuttings should be sterile, as should the soil and pots they are grown in. Tools can be dipped in a solution of nine parts clean water and one part Clorox. Soil can be [heat treated](#) as can the containers the cuttings are rooted and grown in.

SUMMARY: It is believed that NeRNV is widespread in Europe (Skelton *et al.* 2004) and it apparently is becoming widespread in North America. The reason for its spread is twofold. First, it is a mechanically transmitted virus. Second, all the plants that have been diagnosed with this virus since it was first found in the year 2000 can be and are vegetatively propagated. Cuttings from an infected plant will also be infected. In addition, plants that are not

¹ Contribution No. 787, Bureau of Entomology, Nematology and Plant Pathology – Plant Pathology Section

² Plant Pathology Virologist, FDACS, Division of Plant Industry, Post Office Box 147100, Gainesville, Florida 32614-7100

³ Molecular Biologist-Plant Pathology, FDACS, Division of Plant Industry, Post Office Box 147100, Gainesville, Florida 32614-7100

initially infected can be contaminated either by unclean tools or contact with infected plants. Over time, as these infected plants are sold around the world and vegetatively propagated again and again, the infected plants will continue to spread worldwide.

As one website so apply put it: "[Prevention is the only economic control for virus diseases.](#)"

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